

What is claimed is:

1. A method for enhancing performance of an electronic device having a host module operatively connected to a memory device via a bus system, the bus system  
5 comprising a plurality of signal lines and N data lines for conveying signals and data between the host module and the memory device, wherein the host module is operable in a plurality of data modes, said plurality of data modes including at least one data mode that uses M data lines to convey data between the host module and the memory device, with M smaller than N, leaving (N-M) unused data lines in the bus system, said method  
10 comprising:  
    providing in the memory device a module for generating at least one further signal; and  
    causing an exchange of data, based on said at least one further signal, between the host module and the memory device using at least one of the unused data lines even when  
15 the host module is operated in said at least one data mode.
2. The method of claim 1, wherein said at least one further signal comprises a command signal, conveyed to the host module on another one of the unused data lines.
- 20 3. The method of claim 2, wherein said at least one further signal further comprises a clock signal conveyed to the host module on yet another one of the used data lines.
4. The method of claim 1, wherein N is equal to 8 and M is equal to 4, leaving 4 unused data lines, and wherein said at least one further signal comprises a clock signal  
25 conveyed from the memory device to the host module on another one of the unused data lines, and a command signal conveyed between the host module and the memory device on yet another one of the unused data lines.
5. The method of claim 4, wherein said at least one of the unused data lines  
30 comprises two unused data lines for carrying out the exchange of data in a differential manner.

6. The method of claim 1, wherein the electronic device is operable in a serial peripheral interface (SPI) mode and the bus system further comprises a further signal line for conveying a chip select (CS) signal from the host module to the memory device, and wherein the further signal is conveyed from the memory device to the host module on the  
5 further signal line.

7. The method of claim 6, wherein the further signal comprises a command signal.

8. The method of claim 6, wherein N is equal to 8 and M is equal to 4, leaving 4  
10 unused data lines for carrying out the exchange of data.

9. The method of claim 8, wherein exchange of data is carried out in two differential pairs.

10. The method of claim 1, wherein N is equal to 8 and M is equal to 1, leaving 7  
15 unused data lines, and wherein said at least one further signal comprises a clock signal conveyed from the memory device to the host module on another one of the unused data lines, and a command signal conveyed between the host module and the memory device on yet another one of the unused data lines.

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11. The method of claim 10, wherein said exchange of data is carried out on a different one of the unused data lines.

12. The method of claim 11, wherein said exchange of data is carried out on two or  
25 more different unused data lines.

13. An electronic device for use in conjunction with a memory device, comprising:  
a host module; and  
a bus system operatively connecting the host module to the memory device, the  
30 bus system comprising a plurality of signal lines and N data lines for conveying signals and data between the host module and the memory device, wherein the host module is operable in a plurality of data modes, said plurality of data modes including at least one data mode that uses M data lines to convey data between the host module and the memory

device, with M smaller than N, leaving (N-M) unused data lines in the bus system, and wherein the memory device is capable of generating at least one further signal, for causing an exchange of data, based on the further signal, between the host module and the memory device using at least one of the unused data lines even when the host module is  
5 operated in said at least one data mode.

14. The electronic device of claim 13, wherein the memory device comprises an embedded module for generating said at least one further signal.

10 15. The electronic device of claim 14, wherein said at least one further signal comprises a command signal conveyed to the host module on another one of the unused data lines.

15 16. The electronic device of claim 15, wherein said at least one further signal further comprises a clock signal conveyed to the host module on yet another one of the unused data lines.

17. The electronic device of claim 13, comprising a mobile phone.

20 18. The electronic device of claim 13, comprising a PDA.

19. The electronic device of claim 13, operable in a serial peripheral interface, wherein the bus system further comprises a further signal line for conveying a chip select (CS) signal from the host module to the memory device, and wherein the further signal is  
25 conveyed from the memory device to the host module on the further signal line.

20. The electronic device of claim 19, wherein the further signal comprises a command signal.

30 21. The electronic device of claim 13, comprising a software program, responsive to said at least one further signal, for processing the data exchanged between the host module and the memory device on at least one of the unused data lines.

22. A memory device for use in conjunction with a host module via a bus system, the bus system comprising a plurality of signal lines and N data lines for conveying signals and data between the host module and the memory device, wherein the host module is operable in a plurality of data modes, said plurality of data modes including at least one data mode that uses M data lines to convey data between the host module and the memory device, with M smaller than N, leaving (N-M) unused data lines in the bus system, said memory module comprising:

a module for generating at least one further signal; and

a sub-bus system operatively connecting the module and at least some of the unused data lines for causing an exchange of data, based on the further signal, between the host module and the memory device using said at least some of the unused data lines even when the host module is operated in said at least one data mode.

23. The memory device of claim 22, wherein said at least one further signal comprises a clock signal conveyed to the host module one another one of the unused data lines.

24. The memory device of claim 23, wherein said at least one further signal comprises a command signal conveyed to the host module on yet another one of the unused data line.

25. The memory device of claim 22, wherein the module for generating said at least one further signal comprises a micro-controller.

26. The memory device of claim 22, wherein the module for generating said at least one further signal comprises an input/output device.

27. A software program product embodied in a memory device, the memory device for use in conjunction with a host module via a bus system, the bus system comprising a plurality of signal lines and N data lines for conveying signals and data between the host module and the memory device, wherein the host module is operable in a plurality of data modes, said plurality of data modes including at least one data mode that uses M data lines to convey data between the host module and the memory device, with M smaller

than N, leaving (N-M) unused data lines in the bus system, said software program comprising:

a code for generating at least one further signal; and

5 a code for causing an exchange of data, based on the further signal, between the host module and the memory device using said at least some of the unused data lines even when the host module is operated in said at least one data mode.

28. The software program product of claim 27, wherein said at least one further signal comprises a command signal.

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29. The software program product of claim 27, wherein said at least one further signal comprises a clock signal.

30. A software program product embodied in an electronic device for use in  
15 conjunction with a memory device, wherein the electronic device comprises

a host module;

a bus system operatively connecting the host module and the memory device, the bus system comprising a plurality of signal lines and N data lines for conveying signals and data between the host module and the memory device, wherein the host module is  
20 operable in a plurality of data modes, said plurality of data modes including at least one data mode that uses M data lines to convey data between the host module and the memory device, with M smaller than N, leaving (N-M) unused data lines in the bus system, and wherein the memory device is adapted to generate at least one further signal to cause an exchange of data, based on the further signal, between the host module and the memory  
25 device, said software program comprising:

a first code for receiving the further signal; and

a second code, responsive to the further signal, for causing the host module to facilitate said exchange of data using at least some of the unused data lines even when the host module is operated in said at least one data mode.

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31. The software program of claim 30, wherein the electronic device is operable in a serial peripheral interface (SPI) mode, and the bus system further comprises a further signal line for conveying a chip select (CS) signal from the host module to the memory

device, and wherein the first code recognizes the further signal when the further signal is conveyed from the memory device to the host module on the further signal line.